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PESTS NOT KNOWN TO OCCUR IN THE UNITED STATES OR OF LIMITED DISTRIBUTION NO. 72: GARDEN WEEVIL

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Pest

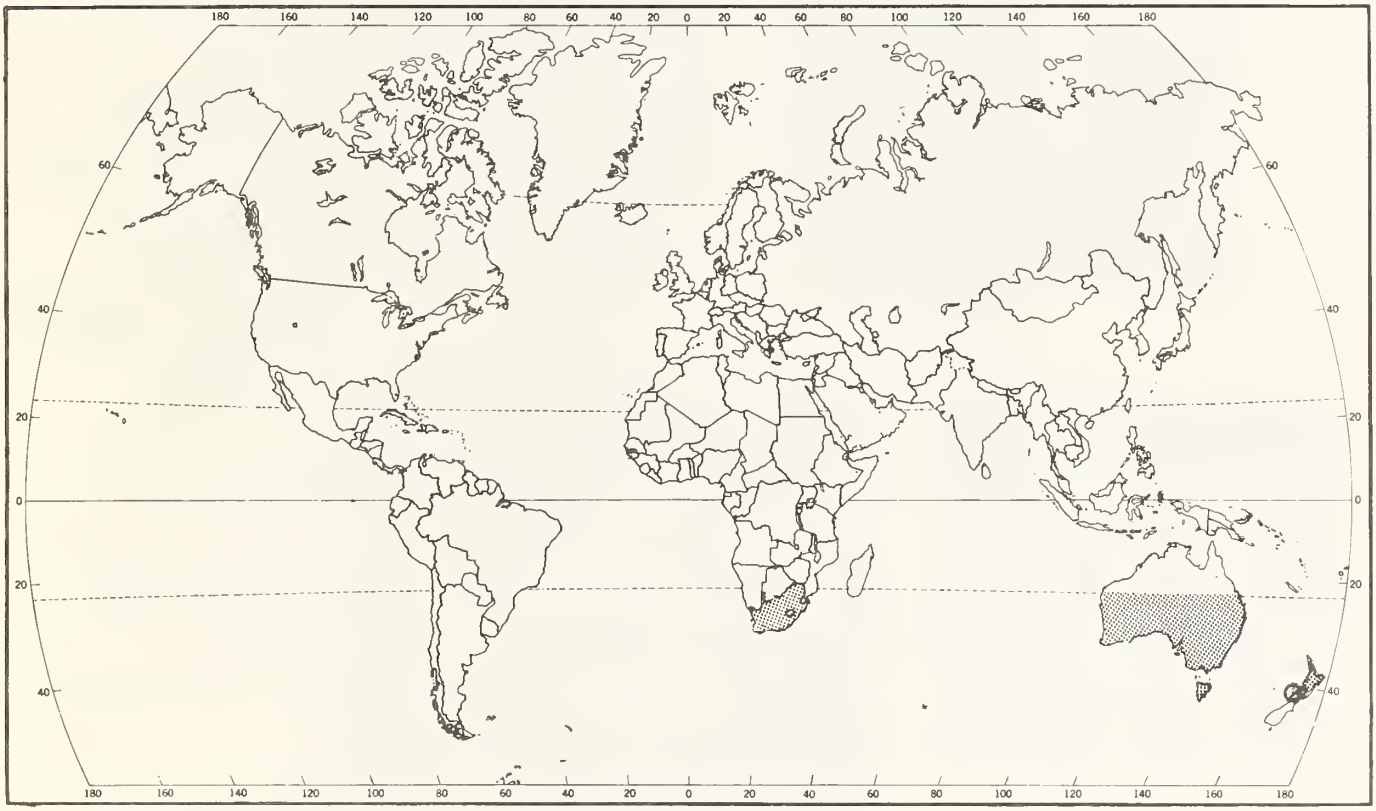
GARDEN WEEVIL
Phlyctinus callosus Boheman

Order: Family

Coleoptera: Curculionidae

Economic Importance

P. callosus is an important pest of apples (Barnes and Swart 1980) and grapes in South Africa and is a pest of vegetable crops in New Zealand (Ferro 1978). The larval stage is more damaging than the adult stage. Detection of this pest usually occurs after the damage is done because of its habits. The larvae live in the soil and feed on roots of host plants. Adults are often overlooked because they feed at night and hide during the day (Miller 1979).



Phlyctinus callosus distribution map (Prepared by Non-Regional Administrative Operations Office and Biological Assessment Support Staff, PPQ, APHIS, USDA).

General Distribution

The weevil is indigenous to South Africa and was first described in 1834 (Barnes 1984). It is widely dispersed throughout southern Australia (including Tasmania (Miller 1979)), but it has not been reported in Queensland or the Northern Territory (Walker 1981). It also occurs in New Zealand throughout the warmer parts of North Island and Nelson in the South Island (Ferro 1978).

Hosts

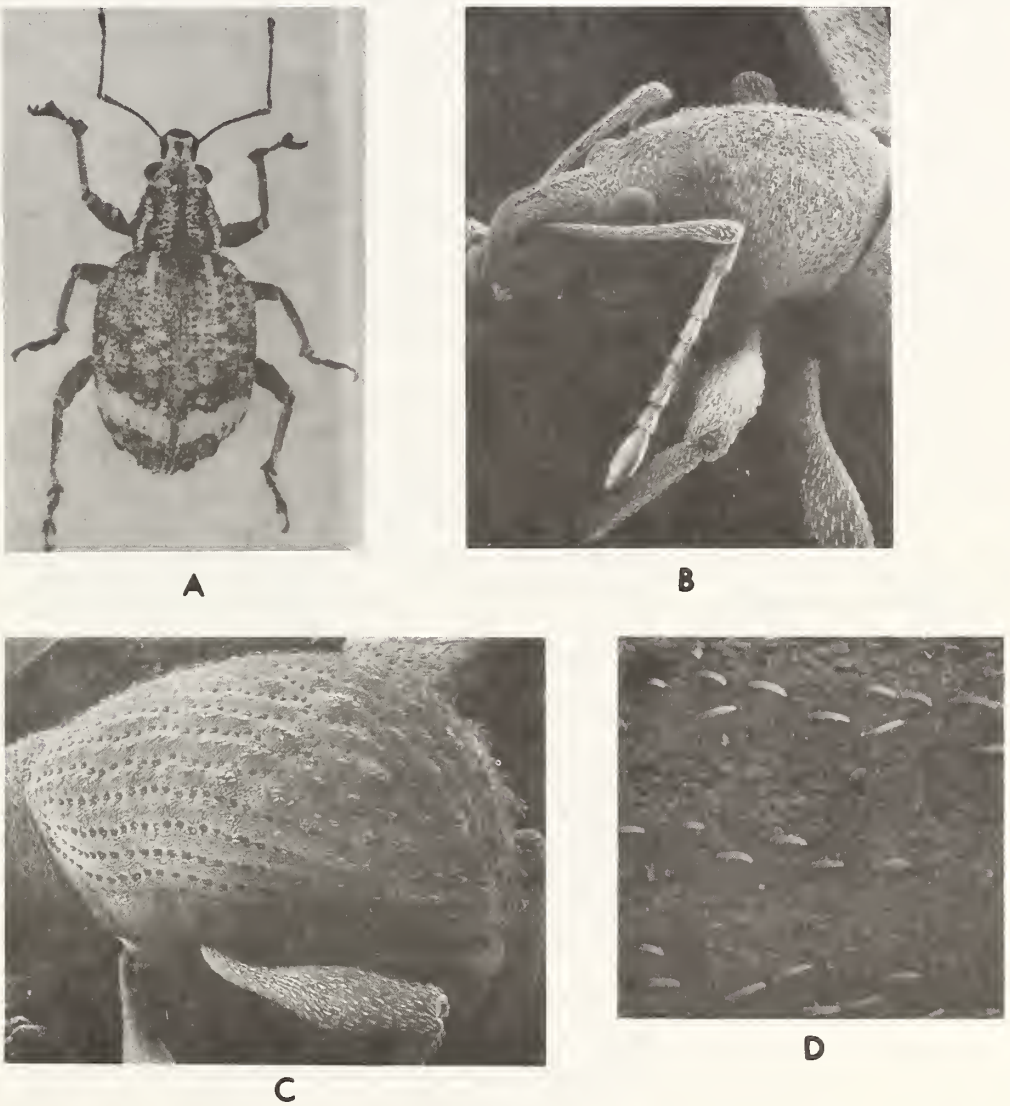
Adults damage a wide variety of ornamental plants as well as various fruits including Fragaria sp. (strawberry), Malus sylvestris (apple), Prunus persica (nectarine, peach), P. domestica (plum), Vitis sp. (grape) (Barnes 1984), and Juglans sp. (walnut) (Walker 1981). Larvae seem to prefer plants with thick underground parts, such as the tap roots of carrots or the corms of Iris xiphium (Spanish iris) and Cyclamen persicum (florist's cyclamen) (May 1966). They are particularly damaging to succulents, such as sedum and cacti (Victorian Plant Research Institute 1970). The recorded host list includes Adromischus phillipsiae, Aeonium holochrysum, Aeonium urbicum, Allium cepa (onion), Bergeranthus multiceps, B. scapiger, Callistephus chinensis (China-aster), Cheiridopsis spp., Chrysanthemum spp., Citrus spp., Crassula corymbulosa, Crassula cultrata, Crassula multicava, Crassula rosularis, Crocus sp., Dahlia sp., Daucus carota (carrot), Dianthus caryophyllus, Echeveria agavoides, Echeveria fulgens, Echeveria gibbiflora, Echeveria X gilva, Echeveria multicaulis, Echeveria nodulosa, Echeveria pubescens, Echeveria X scaphophylla, Epiphyllum spp., Erepsia inclaudens, Faucaria albidens, F. duncanii, F. lupina, F. tigrina (tiger's jaw), Gerbera jamesonii, Glottiphyllum linguiforme, Kalanchoe tubiflora (Spiller and Wise 1982), Lolium sp. (a perennial ryegrass) (Ferro 1978), Narcissus pseudonarcissus (daffodil), Pastinaca sativa (parsnip), Phaseolus vulgaris (beans), Pleiospilos willowmorensis, Raphanus sativus (radish), Rochea coccinea, Sedum adolphi, Sedum ellacombianum, Sedum nussbaumeranum, Sedum palmeri (Spiller and Wise 1982), Solanum tuberosum (potato) (Walker 1981), and Vitis vinifera (wine grape) (Spiller and Wise 1982). A larva has been reported feeding in a Pelargonium (geranium) stem (Barnes 1984).

Characters

ADULTS (Fig. 1A) - Length 6 mm including rostrum, eyes very prominent (Lea 1930). Rostrum apex bare and smooth (D. R. Whitehead, pers. comm.). Antennal scape reaching well beyond front margin of prothorax, club distinct (B. May, pers. comm.). Body grayish brown or grayish black, posterior end of globular abdomen often with light transverse band (V mark) (Ferro 1978) but character not reliable (D. R. Whitehead, pers. comm.).

Adults of P. callosus may be distinguished from North American Otiorhynchinae by checking the following characters in the sequence listed: antennal funicle with 7 segments (Fig. 1B) (not 6). Tarsal claws free (not connate basally). Mandible with 2 or 3 large setae (not 5 or more). Antennal scape with mixture of fine and coarse decumbent and suberect setae (not round or

(Fig. 1)



Phlyctinus callosus adult. A. Dorsal view (From Whitehead 1959). B. Male head and pronotum, dorsolateral view, 20X. C. Male elytra, posterolateral view, 20X. D. Female elytra clothed with rounded scales, dorsal view, 80X (Electron micrographs by N. Chaney, Plant Stress Laboratory, EM Facility, Plant Physiology Institute, Agricultural Research Service).

oval scales). Further distinguished from species with round or oval scales on scape thus: segment 7 of funicle longer than wide; elytra with stria 10 complete and declivity tuberculate (Fig. 1C). Antennal scape reaching well past front margin of prothorax. Elytra clothed with round scales (Fig. 1D) (not slender scales or setae). Elytra prominently tuberculate on declivity (not smooth) (D. R. Whitehead*).

EGGS - Size 0.90 X 0.45 mm, oblong, creamy white, poles becoming blackish as eggs mature (May 1966).

LARVAE - Maximum size 9.0 X 3.0 mm. Head exserted (Figs. 2 A-D), width 1.75 mm, red brown with paler paramedian area and darker parietal stripes, frontal margin black, maculae of hypopharyngeal bracon extending along posterior margin (Fig. 2E). Pronotum lightly pigmented. Body dorsum smooth, ventral lobes and folds asperate; bases of setal groups sclerotized; setae red brown, moderately long, robust.

Abdominal segments II-V with ventropleural lobes with minor seta more than one-half as long as major seta; segments V-VII with major spiracular seta (spiracular seta 2) on middle fold, dorsal to spiracle. Alimentary canal with gastric caeca tapering, as long as width of tube, 5 each side of lower coil (May 1977). Abdomen with lateral lobes broadly rounded. Anal segment (Fig. 3A) protruding (May 1966).

P. callosus larvae with their red-brown heads and long body hairs resemble the widespread Otiorhyncyhus sulcatus (Fabricius), black vine weevil. O. sulcatus, however, differs by a bright yellow-brown head that is proportionately larger; maculae of hypopharyngeal bracon not extending along posterior margin; body setae tapered more and bent; pronotum strongly sclerotized; abdominal folds dorsally asperate; lateral abdominal lobes narrowly rounded; abdominal segments V-VII with major spiracular seta on posterior fold, caudal to spiracle; anal segment (Fig. 3B) tucked in (May 1966, 1977).

PUPAE (Figs. 4 A-B) - Length 7.0-8.0 mm. Apex with stout, hooked bristles on prominent tubercles, pseudocerci inconspicuous and differ little from other abdominal bristles. Secondary pterothecae protrude well beyond primary. Thecae of

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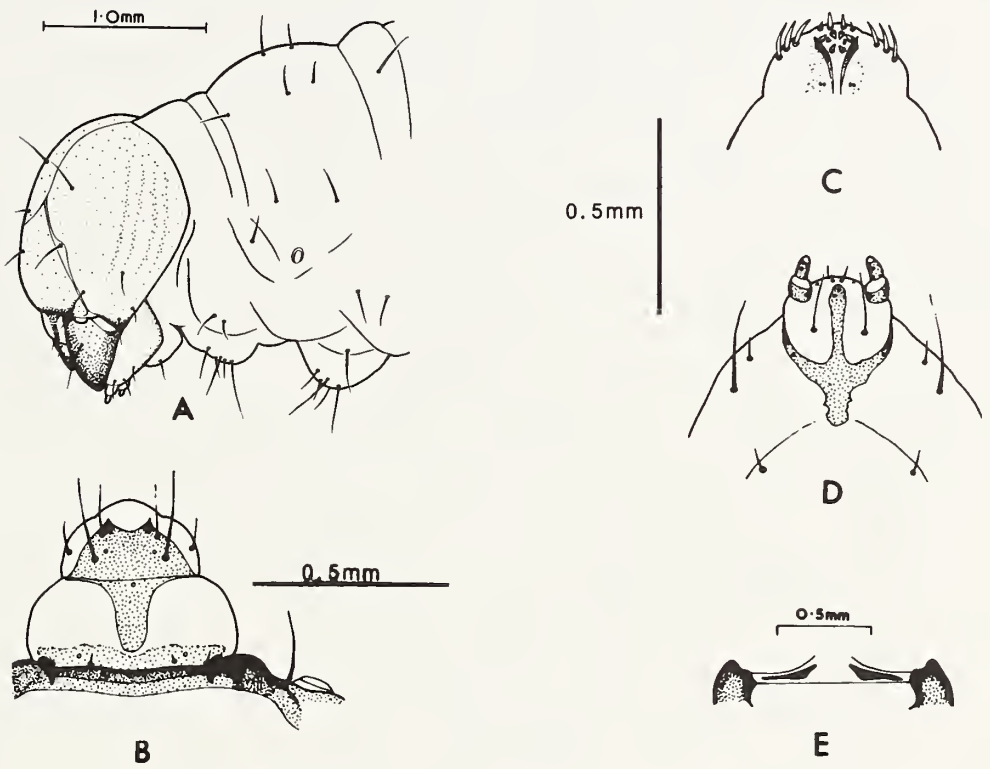
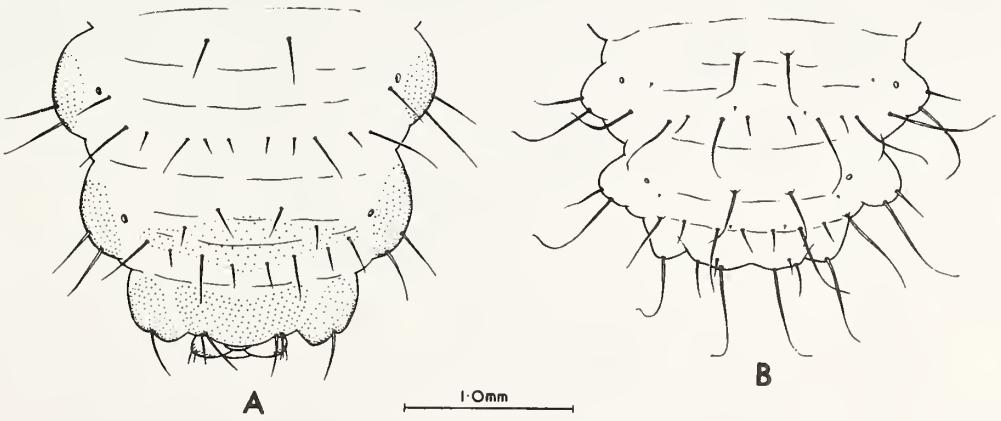
mandibular cusps conspicuous. O. sulcatus (Figs. 4 C-D), in contrast with P. callous, does not possess secondary pterothecae and has strong, hornlike pseudocerci (May 1966).

(Fig. 2)

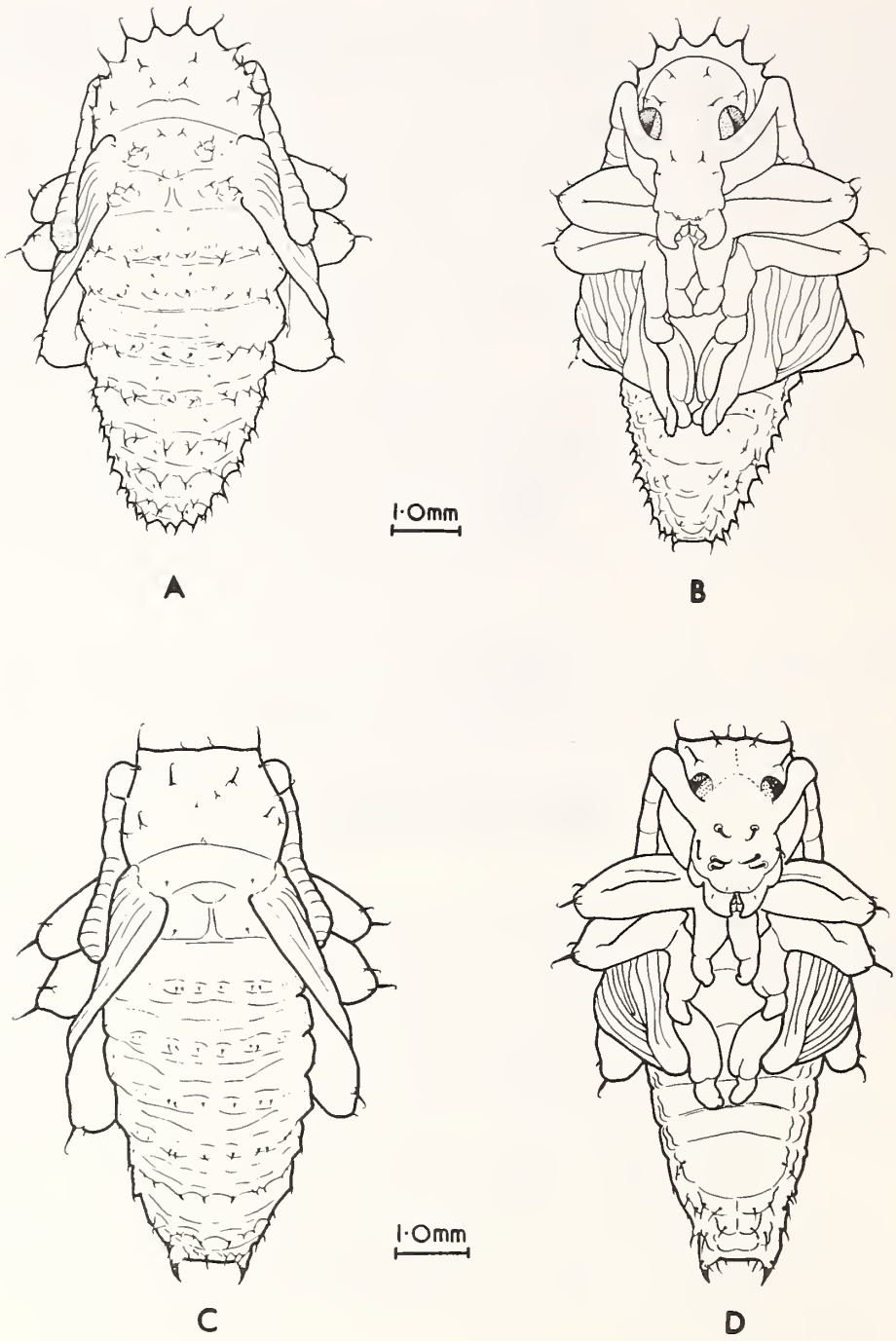


(Fig. 3)



2. Phlyctinus callosus larval heads. A. Exserted head, lateral view. B. Labrum, clypeus, frontal margin, antenna. C. Epipharynx. D. Labium. E. Hypopharyngeal bracon. 3. Terminal larval segments, dorsal view. A. Phlyctinus callosus. B. Otiorhynchus sulcatus (2A and 3 from May 1966, 2B to E from May 1977).

(Fig. 4)



Pupae: Phlyctinus callosus - A. Dorsal view. B. Ventral view. Otiorhynchus sulcatus - C. Dorsal view. D. Ventral view (From May 1966).